

What is claimed is:

1. A modular electrical connector, comprising:
a plug comprising a printed circuit board, a contact finger positioned on a portion of the printed circuit board, and a housing for supporting and constraining the printed circuit board so that the portion of the printed circuit board extends from the housing, the printed circuit board having a flexible portion that permits the portion of the printed circuit board to translate in relation to the housing; and
a receptacle for mating with the plug and comprising a first contact for electrically contacting the contact finger when the plug and the receptacle are mated, and a housing having a slot formed therein for receiving the portion of the printed circuit board when the plug and the receptacle are mated.
2. The modular electrical connector of claim 1, wherein the first contact comprises an elongated portion, and a contact portion electrically and mechanically coupled to the elongated portion for contacting the contact finger when the plug and the receptacle are mated, the contact finger having a width greater than a width of the elongated portion.
3. The modular electrical connector of claim 2, wherein the elongated portion extends in a first direction and the contact portion extends in a second direction substantially perpendicular to the first direction.
4. The modular electrical connector of claim 1, wherein the housing of the plug comprises a first and a second lip each extending from an edge of the housing of the plug, the first and second lips overlap a respective first and second side of the housing of the receptacle when the plug and the receptacle are mated, and a clearance exists between at least one of the first lip and the first side, and the second lip and the second side so that the housing of the plug can move within a predetermined range of motion in relation to the housing of the receptacle when the plug and the receptacle are mated.
5. The modular electrical connector of claim 1, wherein the housing of the receptacle has a first and a second key formed respectively on the first and second sides, the first and second lips have a respective first and second slot formed therein, and the first and second lips engage the respective first and second keys by way of the respective first and second slots when the plug and the receptacle are mated.
6. The modular electrical connector of claim 1, wherein:

the plug is can be mounted on an electrical component; and

the plug further comprises a tuning-fork-type contact comprising a first arm, a second arm spaced apart from the first arm, and a pin portion adjoining the first and second arms, the first and second arms contacting opposing sides of the printed circuit board and the pin portion securely engaging the electrical component when the plug is mounted on the electrical component.

7. The modular electrical connector of claim 1, wherein:

the receptacle is can be mounted on an electrical component; and

the receptacle further comprises a printed circuit board and a tuning-fork-type contact comprising a first arm, a second arm spaced apart from the first arm, and a pin portion adjoining the first and second arms, the first and second arms contact opposing sides of the printed circuit board of the receptacle and the pin portion securely engages the electrical component when the receptacle is mounted on the electrical component.

8. The modular electrical connector of claim 1, wherein the receptacle further comprises a printed circuit board, and the first contact comprises a first arm and a second arm spaced apart from the first arm, the first and second arms contact opposing sides of the printed circuit board of the receptacle.

9. The modular electrical connector of claim 1, wherein the contact finger comprises a substantially U-shaped staple.

10. The modular electrical connector of claim 9, wherein the staple has an elongated portion and a first and a second leg adjoining the elongated portion, the first and a second leg can be mounted on a surface of the printed circuit board so that the elongated portion is spaced apart from the surface.

11. The modular electrical connector of claim 1, wherein:

the printed circuit board of the plug has a first plurality of conductive traces formed thereon and extending between a first and a substantially perpendicular second edge of the printed circuit board of the plug; and

the receptacle comprises a printed circuit board having a second plurality of conductive traces formed thereon and extending between a first and a substantially perpendicular second edge of the printed circuit board of the receptacle.

12. The modular electrical connector of claim 1, wherein the receptacle comprises a printed circuit board, and a ground comb comprising a ground contact, the ground comb extending substantially perpendicular to the printed circuit board of the receptacle and securely engaging the printed circuit board of the receptacle by way of a slot formed in the ground comb.

13. The modular electrical connector of claim 12, wherein the first contact is electrically and mechanically coupled to the printed circuit board of the receptacle and comprises an angled portion, an elongated portion adjoining the angled portion, and a contact portion adjoining the elongated portion and being spaced apart from at least a portion of the ground contact so that the contact portion and the ground contact contact opposing sides of the printed circuit board of the plug.

14. The modular electrical connector of claim 13, wherein the contact portion and the ground contact are spaced apart in a direction substantially perpendicular to the printed circuit board of the receptacle.

15. The modular electrical connector of claim 14, wherein the slot formed in the housing of the receptacle is substantially parallel to the printed circuit board of the receptacle.

16. The modular electrical connector of claim 12, a first and a second electrically-conductive trace are formed on opposing sides of the printed circuit board of the plug, and the first contact and the ground contact electrically contact the respective first and second electrically-conductive traces when the plug and the receptacle are mated.

17. The modular electrical connector of claim 1, wherein the receptacle comprises a printed circuit board, and a ground comb comprising a ground contact and a mounting tab, the ground comb extending substantially parallel to the printed circuit board and securely engaging the printed circuit board by way of a slot formed in the mounting tab.

18. The modular electrical connector of claim 17, wherein the first contact is electrically and mechanically coupled to the printed circuit board of the receptacle and comprises an elongated portion adjoining the angled portion, and a contact portion adjoining the elongated portion and being spaced apart from at least a portion of the ground contact so that the contact portion and the ground contact contact opposing sides of the printed circuit board of the plug.

19. The modular electrical connector of claim 18, wherein the contact portion and the ground contact are spaced apart in a direction substantially parallel to the printed circuit board of the receptacle.

20. The modular electrical connector of claim 19, wherein the slot formed in the housing of the receptacle is substantially perpendicular to the printed circuit board of the receptacle.

21. The modular electrical connector of claim 17, wherein the printed circuit board of the plug comprises a first and a second electrically-conductive trace formed on opposing sides of the printed circuit board, and the first contact and the ground contact electrically contact the respective first and second electrically-conductive traces when the plug and the receptacle are mated.

22. The modular electrical connector of claim 1, wherein the contact finger is mounted on a first side of the printed circuit board and the plug further comprises a ground plane mounted on a second side of the printed circuit board.

23. The modular electrical connector of claim 1, wherein the contact finger is mounted on a first side of the printed circuit board and the plug further comprises a ground plate mounted on a second side of the printed circuit board.

24. The modular electrical connector of claim 23, wherein the ground plate is spaced apart from the second side of the printed circuit board.

25. The modular electrical connector of claim 1, wherein the plug comprises a plurality of the printed circuit boards, and a plate mechanically coupled to forward portions of the plurality of the printed circuit boards.

26. The modular electrical connector of claim 25, wherein the plug comprises a first and a second of the plates mechanically coupled to respective upper and lower edges of the forward portions of the plurality of printed circuit boards.

27. The modular electrical connector of claim 1, wherein the housing of the plug and the housing of the receptacle each comprise an outer cover.

28. The modular electrical connector of claim 1, wherein the housing of the receptacle comprises a front housing having the slot formed therein, and a rear housing coupled to the front housing.

29. The modular electrical connector of claim 1, wherein the receptacle comprises a printed circuit board and the first contact is mechanically and electrically coupled to the printed circuit board of the receptacle.

30. The modular electrical connector of claim 29, wherein the printed circuit boards of the plug and the receptacle are substantially rectangular.

31. The modular electrical connector of claim 29, wherein the corners of the printed circuit boards of the plug and the receptacle are one of rounded and clipped.

32. The modular electrical connector of claim 1, wherein the forward portion of the circuit board is thinner than a remainder of the circuit board.

33. The modular electrical connector of claim 1, wherein the contact finger is formed by screening dielectric material through a graduated mask to form a rounded contact region on the printed circuit board, and metalizing the contact region.

34. The modular electrical connector of claim 1, wherein the contact finger is formed by molding a raised area into the printed circuit board, and metalizing the raised area.

35. The modular electrical connector of claim 1, wherein the forward portion of the printed circuit board is substantially contoured.

36. The modular electrical connector of claim 1, wherein the contact finger comprises one of round wire and a stamped conductor surface soldered and crimped to the printed circuit board.

37. The modular electrical connector of claim 29, wherein the printed circuit boards of the plug and the receptacle each have an electrically-conductive trace formed thereon and each have a localized thin region beneath the electrically-conductive traces, and the printed circuit board of the plug has a localized thin region beneath the contact fingers.

38. The modular electrical connector of claim 1, wherein a forward edge of the printed circuit board is stepped so that a length of an uppermost portion of the printed circuit board is greater than a length of a lowermost portion of the printed circuit board.

39. The modular electrical connector of claim 1, wherein the printed circuit board has an electrically-conductive trace formed thereon and extending along a first and an opposing second surface of the printed circuit board.

40. The modular electrical connector of claim 1, wherein the plug comprises a plurality of the contact fingers, a plurality of second contacts mechanically coupled to a lower edge of the printed circuit board, and a plurality of electrically-conductive traces each extending between one of the plurality of the contact fingers and a respective one of the plurality of second contacts, and the one of the electrically-conductive traces coupled to the one of the contact fingers most proximate the lower edge extends to the one of the second contacts most distant from a forward edge of the printed circuit board.

41. The modular electrical connector of claim 1, wherein the printed circuit board has a rib extending from an upper edge thereof, and the housing of the plug has a slot formed in an upper inner surface thereof for receiving the rib.

42. A modular electrical connector, comprising:

a plug comprising a first housing, a first printed circuit board at least partially mounted in the first housing so that a portion of the first printed circuit board extends from the first housing in a first direction and can flex in relation to the first housing in a second direction substantially perpendicular to the first direction, and a contact finger mounted on the portion of the first printed circuit board; and

a receptacle for mating with the plug and comprising a second printed circuit board, a contact mounted on the second printed circuit board for electrically contacting the contact finger when the plug and the receptacle are mated, and a second housing for substantially enclosing the contact, the second housing having a slot formed therein for receiving the portion of the printed circuit board and extending in a third direction substantially perpendicular to the first and second directions when the plug and the receptacle are mated.

43. The modular electrical connector of claim 42, wherein the slot extends between a first and a second side of the second housing, the first housing comprises a first and a second lip extending from the first housing substantially in the first direction, the second housing is positioned substantially between the first and second lips when the plug and the receptacle are mated, and a clearance exists between at least one of the first side of the second housing and the first lip, and the second side of the second housing and the second lip so that the plug is

capable of a predetermined range of movement in relation to the receptacle substantially in the third direction.

44. The modular electrical connector of claim 43, wherein the contact comprises an elongated portion extending substantially in the first direction when the plug and the receptacle are mated, and a contact portion mechanically and electrically coupled to the elongated portion and extending substantially in the third direction for contacting the contact finger when the plug and the receptacle are mated.

45. A modular electrical connector, comprising:

a plug comprising a housing and a printed circuit board mounted in the housing so that an end portion of the printed circuit board overhangs an edge of the housing the printed circuit board having a flexible portion formed therein that permits the end portion of the circuit board to deflect in relation to the housing; and

a receptacle for mating with the plug and comprising a housing having a slot formed therein for receiving the end portion so that misalignment between plug and the receptacle causes the end portion to flex in response to contact between the end portion and the housing of the receptacle.